

Smithsonian Institution Global Earth Observatories (SIGEO)

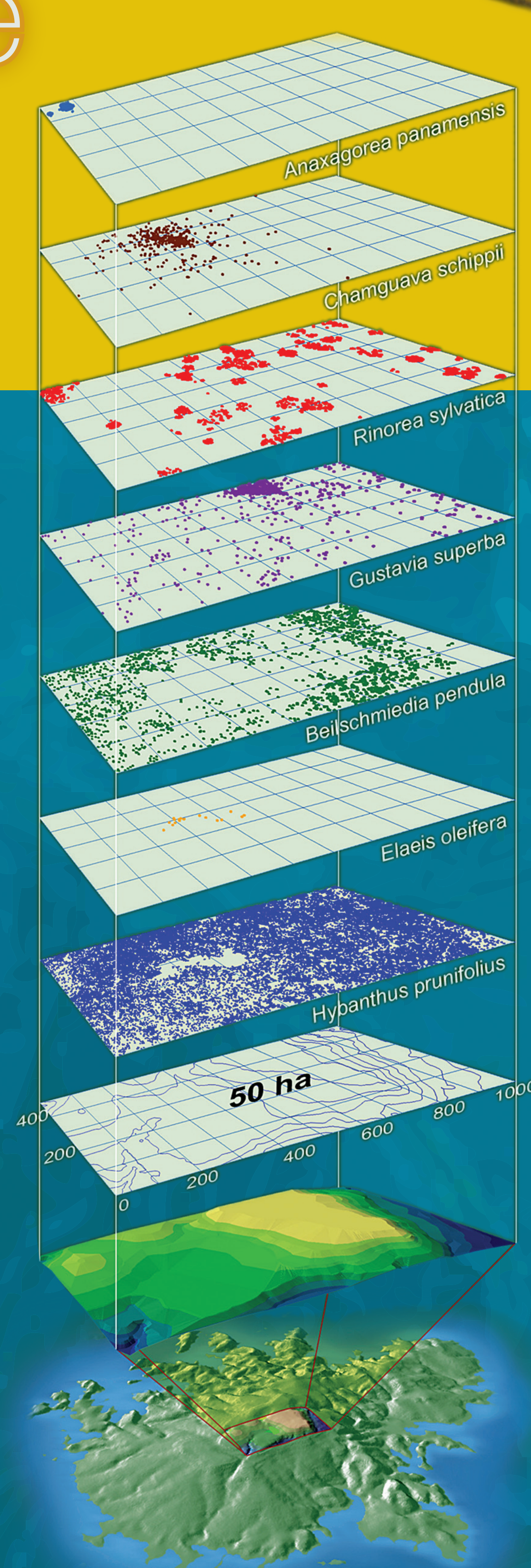
A Research Platform to Measure the Global Impact of Climate Change

Over the past 25 years it has become clear that tropical forest populations are incredibly dynamic and responsive to climate change. Large-scale and standard forest census methods pioneered by the Smithsonian Tropical Research Institute in the Barro Colorado Nature Monument in Panama proved to be a powerful approach to studying the dynamics of tropical forests. By 1990 scientists around the world had replicated the methods and a global network of research plots emerged. From the first forest research plot on 50 hectares of lowland tropical forest, the network grew to individual forest plots administered by the Smithsonian and led by partner institutions in countries throughout the Americas, Asia and Africa.

By creating the first actuarial table for tropical trees around the world, this network provided a basis for determining quantitatively how trees and forest ecosystems are responding to changing climate. The growth and survival of 3.5 million trees in over 6,500 species—over 12 percent of all known tropical tree species—are being monitored.

Now the Smithsonian is transforming the network, known as the Center for Tropical Forest Science, into SIGEO, a research effort that will enable scientists to investigate key indicators of global environmental health. Building on advances in understanding tropical diversity already gained, SIGEO will monitor the effects of anthropogenic increases in atmospheric CO₂, nitrogen and general air pollution at local, regional and global scales.

<http://biogeodb.stri.si.edu/bioinformatics/sigeo/>
<http://remotesensing.usgs.gov/>



Focus will be on the following:

- Global Carbon Research, designed to fill wide gaps in understanding the role of forests in the global carbon budget and whether temperate and tropical forests behave differently under changing global conditions.
- Branching Out Into the Temperate Zone, which will permit direct comparison of large-scale temperate plots with the tropical plot network to assess behavioral changes linked to atmospheric carbon dioxide levels and changing temperatures.
- Expanding Monitoring to Look Beyond the Trees, aimed at significantly improving assessment of the impact of global change on biodiversity through focused surveys of vertebrates, invertebrates and microbes, and providing training in developing countries leading to sustainable management of natural resources.